



Effects of continued folic acid supplementation during the second and third trimesters of pregnancy on children's neurocognitive development at 11 years

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policies. We believe this information is valuable to local, regional and national service commissioning groups in the redirection of efforts and resources to target populations where more urgent intervention is required. Points can be learnt from the top performing regions to improve delivery and establish uniformity of care. This project not only identifies the need for continued work in this domain, but also provides a foundation and structure for further analysis of the current services offered in secondary care.

British Society of Paediatric Endocrinology and Diabetes

876 ENDOCRINE DYSFUNCTIONS IN TRANSFUSION DEPENDENT THALASSEMIC CHILDREN: AN OBSERVATIONAL STUDY

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Background Multiple transfusion therapy in Thalassemia Major has led to increased life expectancy but complications like endocrine dysfunction can occur due to secondary iron deposition especially in the endocrine organs despite chelation therapy.

Objectives The objective of this study was to determine the prevalence of endocrine dysfunctions in Transfusion dependent Thalassemic patients and correlation between serum ferritin levels and specific endocrine dysfunction.

Methods The study included Transfusion dependent Thalassemic patients between the age group 5 to 18 years receiving at least a year of chelation therapy with deferasirox in a tertiary care centre. After proper consent/assent and clearance from the ethical committee, patients' characteristics and investigations were recorded on a predesigned proforma. Patients were analysed for endocrine dysfunctions like Growth hormone deficiency, Hypothyroidism, Parathyroid dysfunction, dysglycemia and delayed puberty. Assessment for parathyroid dysfunction, dysglycemia and puberty was done in patients more than 10 years of age only. Data was expressed as Mean \pm S.D. with 95% confidence Intervals. Correlation between endocrine dysfunctions and serum ferritin levels was investigated using Pearson's correlation and p value of <0.05 was considered significant.

Results A total of 50 patients completed the study, out of which 16 patients were more than 10 years of age. The mean age of the study participants was 8.3 ± 2.70 years with a male to female ratio of 2.8:1. The mean age of diagnosis was 16.87 ± 14.03 months and mean duration of chelation was 38.40 ± 26.71 months. Endocrine dysfunction was observed in 28 patients (56%). Evaluation for parathyroid dysfunction, dysglycemia and pubertal disorders was done in patients more than 10 years of age only while short stature and thyroid dysfunction was evaluated in all 50 patients completing the study. Maximum prevalence was of parathyroid dysfunction, observed in 10 patients (62.5%) followed by short stature in 17 patients (34%), Impaired Fasting Glucose/Impaired Glucose Tolerance in 4 patients (25%) and subclinical hypothyroidism

in 7 patients (14%). Pubertal delay and overt diabetes were not detected in any of the patients. Growth hormone deficiency on provocative stimulation test was observed in 8 patients out of 17 patients (47.05%) with short stature. The serum ferritin levels did not show a significant correlation with any of the endocrine dysfunctions.

Conclusions This study showed that 56% of the Transfusion dependent Thalassemics had at least one endocrinopathy. A statistically insignificant correlation of endocrinopathy with serum ferritin levels was observed in the study. Irrespective of chelation therapy, patients with transfusion dependent thalassemia can have a considerably high prevalence of endocrine complications. Serum levels of ferritin cannot be utilised as a predictor of endocrine dysfunctions. Therefore, all patients with Thalassemia requiring frequent transfusions should undergo regular monitoring for endocrinopathies.

British Association of Perinatal Medicine and Neonatal society

877 EFFECTS OF CONTINUED FOLIC ACID SUPPLEMENTATION DURING THE SECOND AND THIRD TRIMESTERS OF PREGNANCY ON CHILDREN'S NEUROCOGNITIVE DEVELOPMENT AT 11 YEARS

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Background Peri-conceptional folic acid (FA) supplementation is known to prevent neural tube defects. It remains uncertain whether continuing FA after the first trimester has benefits for offspring neurodevelopment. A previously published follow up study of Mothers who had participated in a randomized trial of FA Supplementation in the Second and Third Trimesters (FASSTT) in pregnancy and who had received 400 micrograms/day FA or placebo from the 14th gestational week until the end of pregnancy showed their offspring at both 3 and 7 years scored significantly higher than the placebo group in word reasoning and cognition.

Objectives Follow up investigation of 11 year old children, whose Mothers had participated in a randomized trial of FA Supplementation in the Second and Third Trimesters (FASSTT) in pregnancy and received 400 micrograms/day FA or placebo from the 14th gestational week to determine if previous improvement in Cognitive performance and brain function persists in this age group.

Methods Mother - child pairs who undertook the FASSTT trial (healthy pregnant women aged 18–35 years with singleton pregnancy) and who had taken 400 micrograms/day of FA in the first trimester were randomized to receive FA supplements or placebo until the end of pregnancy. When the child was 11 years old Mother-child pairs were recruited by invitation to undergo assessment of the child's Cognitive performance by the Wechsler Intelligence Scale for Children (WISC-IV). Assessors were blinded to the treatment allocation of the

Mother during the FASSTT trial. In a sub sample of participants, magnetoencephalographic (MEG) brain imaging was performed to assess brain functioning through estimating neuronal activity in relation to semantic processing of language. Related covariates including general health and lifestyle measures, socioeconomic status, anthropometry including BMI status, B-vitamin biomarkers and nutritional dietary analysis were evaluated. Statistical analysis was performed using the Statistical package for the Social Services software.

Results Of the 119 mother-child pairs in the FASSTT trial, 68 children were assessed for neurocognitive performance at 11-year follow up (Dec 2017 to Nov 2018). Children of mothers randomized to FA compared with placebo scored significantly higher in two Processing Speed tests i.e. symbol search (mean difference 2.9 points, 95% CI 0.3 to 5.5, $p=0.03$) and cancellation (11.3 points, 2.5 to 20.1, $p=0.04$), whereas the positive effect on Verbal Comprehension was significant in girls only (6.5 points, 1.2 to 11.8, $p=0.03$).

MEG assessment of neuronal responses to a language task showed increased power at the Beta (13–30 Hz, $p=0.01$) and High Gamma (49–70 Hz, $P=0.04$) bands in children from FA-supplemented mothers, suggesting more efficient semantic processing of language.

Conclusions Continued FA supplementation in pregnancy beyond the early period currently recommended to prevent NTD, can benefit neurocognitive development of the child. MEG provides a non-invasive tool in paediatric research to objectively assess functional brain activity in response to nutrition and other interventions. Our findings add considerably to the existing evidence that have linked maternal folate status in pregnancy with neurocognitive outcomes in the older child. This evidence reinforces our previous findings in these children and suggest that continued FA intervention in pregnancy beyond the early period is beneficial to future neurocognitive development.

Association of Paediatric Emergency Medicine

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715 APPROACH TO EVALUATING A NOVEL EDUCATIONAL E-MODULE ON PAEDIATRIC ADVANCED LIFE SUPPORT

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Background Storytelling is a powerful tool in education where emotional investment rewards enhanced learning. We designed a 'choose your own adventure' story written in the second person where the participant assumes the role of a junior doctor taking decisions in the resuscitation of an infant. The decisions taken influence both the narrative and learner's role making it truly interactive. This breaks from traditional e-learning techniques with linear progression. Instead the learner is supported in a safe environment to make realistic clinical decisions. The purpose of such engagement is to stimulate interest, simulate real clinical practice and enables higher level

learning whilst also testing knowledge in a way that allows detailed personal feedback.

In the current climate of the COVID-19 pandemic, the aim was to produce an innovative e-module that engaged and entertained learners who most likely will have a degree of online burnout. Learning objectives are taken from the advanced paediatric life support course. Retention of knowledge is paramount and through simulating auditory, visual and cognitive cues it is hoped translation into practice is improved.

Objectives In this study, we had the following two aims. Firstly to gather user feedback to determine areas for improvement with subsequent versions. Secondly, to determine the utility of digital simulation in healthcare education as a tool to impact clinical practice.

Methods Many approaches to evaluation exist. Using a framework described by Roland et al. we crafted a pre and post-questionnaire to assess more than simply user experience. Users including all clinical staff in our tertiary hospital emergency department via email. Hence sampling was not random and instead was opportunistic. Beforehand, an anonymous online survey firstly gathered demographic data about users (for example; age, sex, ethnicity, profession group and training experience).

Afterwards, a series of questions were asked, again via an anonymous online survey, to determine the utility of the digital simulation with regards to the following; interactivity, interface, instruction, ideation (what you think you have learned), integration (what you have shown you have learned), implementation and improvement. This 7Is framework allows potential patient benefit to be encapsulated in its outcome measures as has an existing precedent for use as demonstrated in a previous study examining outcomes of a separate e-learning package.

Results Results include the following; 90% had high motivation, 60% were able to easily access the module (desktop computer, smartphone etc), 100% wished to utilise the same style of learning again, 80% report gaining new knowledge or skills, mean time to complete module was 22 minutes, blank space feedback included; 'novel and engaging format, unclear at first how to select choices,' 'needs to include feedback at each decision point, not at end,' 'learnt airway skills and steps to expect in the resuscitation of a baby.' The first one hundred staff to respond were included in this data set with good representation across the different demographic groups.

Conclusions This work represents preliminary stages of development for a novel elearning module. Results suggest with further improvement this is a format that has the potential to engage, educate and impact upon clinical practice.

British Paediatric Respiratory Society

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THE MANAGEMENT OF EPISODES OF A SIGNIFICANT DROP IN LUNG FUNCTION IN PATIENTS WITH CYSTIC FIBROSIS (CF) IN AN OUTPATIENT SETTING

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